

WHAT IS CLAIMED IS:

1. Digital printing or copying machine (1) for one-sided or double-sided printing on a substrate (5) while using at least one toner, with at least one
5 fixation device (3) for fixing the toner image on the substrate (5), wherein the fixation device (3) has at least one heating device (13) for melting the toner image, past which the substrate (5) can be taken, characterized by a guide device (17) for the free floating movement of the substrate (5) in the effective range of the heating device (13).
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2. Printing or copying machine per Claim 1, characterized in that the floating condition of the substrate (5) can be achieved by at least one air cushion acting on the topside (7) having the toner image being fixed and/or the underside (9) of the substrate (5).
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3. Printing or copying machine according to Claim 1, characterized in that the guide device (17) has at least a first blowing device (19) to create a first air cushion on the substrate's underside (9), wherein the first blowing device (19) comprises at least one nozzle, which can be directed against the substrate
20 underside (9), for applying pressurized air (21) to the substrate (5).
4. Printing or copying machine according to Claim 3, characterized in that the air jet (21) has at least one directional component directed perpendicular to the substrate underside (9) and one directional component directed in the
25 transport direction (11) of the substrate (5).
5. Printing or copying machine according to Claim 1, characterized in that the first blowing device (19) comprises a first base plate (25), oriented parallel to or essentially parallel to the transport path of the substrate (5), having
30 several through openings and/or slots, each of which forms a nozzle.

6. Printing or copying machine according to Claim 1, characterized in that the substrate topside (7) containing the toner being fixed can be struck with hot air (15) in order to melt the toner image by the heating device (13).

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7. Printing or copying machine according to Claim 1, characterized in that the guide device (17) comprises at least one second blowing device (31) to create a second air cushion on the topside (7) of the substrate (5), containing the toner image being fixed, and opposite the heating device (13).

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8. Printing or copying machine according to Claim 7, characterized in that the second blowing device (31) comprises at least one second base plate (33) oriented to or essentially parallel to the transport path of the substrate (5), having several through openings (37) and/or slots, each of them forming a nozzle.

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9. Printing or copying machine according to Claim 8, characterized in that the heating device (13) is formed by a radiative device (24), by which the substrate (5) can be exposed to electromagnetic radiation, and the second base plate (33) is arranged in the radiation path between the radiative device (24) and the substrate (5).

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10. Printing or copying machine according to Claim 9, characterized in that a protection plate (41) without through openings is arranged in the radiation path between the radiative device (24) and the second base plate (33).

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11. Printing or copying machine according to Claim 10, characterized in that the second base plate (33) and the protection plate (41) are formed of a transparent material which is permeable to the electromagnetic radiation emitted by the radiative device (24) in the switched on state.

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12. Printing or copying machine according to Claim 10, characterized in that the free space (43) between the protection plate (41) and the second base plate (33) can be exposed to pressurized air.

5 13. Printing or copying machine according to Claim 1, characterized in that the heating device (13) comprises at least one microwave resonator (49), which has a slitlike opening (51), through which the substrate (5) is taken free floating, and in the microwave resonator (49) there is integrated at least one
10 blowing device to create an air cushion on the topside and/or underside of the substrate (5).

14. Printing or copying machine according to Claim 1, characterized in that the guide device (17) comprises a holding device (67) which can be moved in and against the transport direction (11) of the substrate (5) by which the substrate
15 (5) can be grabbed in the region of its front edge or back edge.

15. Printing or copying machine according to Claim 14, characterized in that the holding device (67) has a strip (77) extending transverse to the substrate's transport direction (11), which has at least one preferably slitlike
20 opening (79), which can be exposed to a partial vacuum.

16. Printing or copying machine according to Claim 14, characterized in that a linkage, a crank and rocker mechanism, or a wheelwork can be used for the displacement of the holding device (67).
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17. Printing or copying machine according to Claim 1, characterized in that the guide device (17) has at least one first guide element which can move and is arranged immediately in front of the heating device (13), in particular, a transport belt (87) or roller, which serves to transport the substrate (5) past the
30 heating device (13) and past the heating device (13) as printed.

18. Printing or copying machine according to Claim 17, characterized in that the guide device (17) has at least one second guide element (89), especially a guide plate, arranged stationary in the intermediate space between the first guide element (87) and the heating device (13) looking in the substrate's transport direction (11).

19. Printing or copying machine according to Claim 1, characterized in that the effective range/fixing range of the heating device (13) is very short, preferably less than 20 cm, especially around 10 cm looking in the substrate's transport direction (11).

20. Printing or copying machine according to Claim 19, characterized in that the energy density which can be transmitted by the noncontact heating device (13) is very high.

21. Printing or copying machine according to Claim 20, characterized in that electromagnetic radiation, hot air and/or vapor, especially water vapor, can be applied to the toner image being fixed by the heating device (13).

22. Printing or copying machine according to Claim 1, characterized by a control unit for controlling the substrate speed and/or the position of the substrate relative to the heating device.

23. Printing or copying machine according to Claim 13, characterized in that the slitlike opening (51) of the microwave resonator (49) is bounded by at least one perforated plate (57, 63).

24. Printing or copying machine according to Claim 23, characterized in that the perforated plate (57, 63) is made from a material with low microwave absorption.

25. Printing or copying machine according to Claim 13, characterized in that the transport path of the substrate runs in the vertical direction in the region of the microwave resonator, preferably from top to bottom.

5 26. Printing or copying machine according to Claim 1, characterized in that a cooling device with preferably noncontact operation with respect to the substrate is arranged after the heating device.

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